

Professor JOHANN VON LAMONT was born at Braemar, Aberdeenshire, on December 13, 1805. He was the second of three sons, of whom the eldest and youngest are still resident at Goderich, in British North America. After having received his early education at a private school in his native county, young Lamont, at the age of twelve, left his parents' home to become a pupil in the gymnasium attached to the Scotch Benedictine Monastery at Ratisbon, Bavaria, which was established by the monks especially for the education and support of the sons of Scotch Catholics. In this school he was very successful as a student, and generally maintained a foremost place among his fellow-pupils; a position he owed, in some measure, to the interest taken in him by the Prior, Father Deasson, an excellent mathematician and practical mechanician, who was one of the first to notice the talents possessed by young Lamont. After a most regular attendance at the gymnasium for several years, he, in 1824-1826, also passed through the more advanced philosophical and theological courses at the Lyceum with much distinction.

During his career as a student, Lamont had always exhibited a strong inclination for astronomical studies, and it was a great delight to him, in the summer of 1827, to have an opportunity of visiting the Royal Observatory at Bogenhausen, near Munich, then under the direction of Professor Soldner, the Conservator. Soldner was much impressed with the sound knowledge on most astronomical subjects possessed by his young visitor, and this ultimately led to a closer intimacy between them, and to the appointment of Lamont, in March 1828, to the office of Assistant Astronomer at the Munich Observatory. During these first years of Lamont's career as an astronomer, he gave many indications of his future success, and in various scientific journals of the time several astronomical papers may be found on subjects which occupied his attention while an assistant at the Observatory. One of the first, published in 1829, was his note on the observed diminution of the periodic times of Encke's comet. In 1833 he gave an account of the results of his observations of the solar eclipse of July 16 in that year, which was of some interest. On the death of Professor Soldner, in 1833, the office of Conservator of the Munich Observatory remained vacant for some time; and it was not till July 13, 1835, that it was filled up by the appointment of Dr. Lamont, who had virtually the direction of the Observatory after the death of Soldner. In 1852 Dr. Lamont was appointed Professor of Astronomy in the University of Munich.

Though Professor Lamont has been more generally known in the scientific world by his numerous contributions to the theory and observation of terrestrial magnetism, in which he was always considered one of the principal authorities, he never gave up his interest in astronomical observations, which continued to be the standard work of his Observatory during the larger portion of his directorate; the results have been published in

his series of volumes of the *Annalen der Königl. Sternwarte bei München*. In addition to his zone-work, Lamont for many years took a special interest in various miscellaneous subjects of astronomical research, among which may be noticed his long series of observations of Halley's comet in 1835; and, in the following year, of the second and third satellites of *Saturn*—*Enceladus* and *Tethys*—from which he calculated the elements of their orbits. In 1836 he made some measures of *Pallas*, with the object of determining its diameter; and in the same year he undertook an examination of a few of the principal nebulae and star-clusters, from which he constructed charts of the popular clusters in *Scutum* and *Perseus*. He afterwards published papers on the results of his observations of Moon-culminating stars; on the atmosphere of the Moon; on the rings of *Saturn*; and his important memoir on the mass of *Uranus*, inserted in the *Memoirs of the Royal Astronomical Society*, vol. xi. Professor Lamont's determination of the mass of *Uranus* is based on observations made with the Munich Refractor of 15 feet focal length and $10\frac{1}{2}$ inches aperture, on a few very favourable nights in the autumn of 1837, when he was able to obtain some satisfactory observations of the two outer satellites, *Titania* and *Oberon*. His result, $\frac{1}{24905}$, was not without interest, for it gave a value for the mass of *Uranus* nearly one-fourth part less than that obtained by Bouvard, by the perturbations of *Jupiter* and *Saturn*, which up to that time was generally adopted. Though the value of the mass deduced by Professor Lamont was so much smaller than that previously determined by Bouvard, it was looked upon with some favour as evidence that the mass hitherto in use ought to be diminished, but probably not by so large an amount as that indicated by the difference between the two values. This belief is confirmed by modern investigations. Professor Newcomb's most recent determination, by observations of the two outer satellites in 1874–1875, is $\frac{1}{22738}$.

Professor Lamont was fortunate on several occasions in observing the phenomena visible during eclipses of the Sun, especially in the total eclipses of July 8, 1842, and July 18, 1860, of which he has given interesting detailed accounts. In the *Fortschritte der Physik*, vol. xvi., he has published a valuable résumé of all the observations of the eclipse of 1860, made along the shadow-path from the northern to the eastern coasts of Spain, in which the principal phenomena recorded by the different observers are clearly notified, and the general results discussed. Lamont entertained a notion that the red prominences were produced by clouds or other vapours floating in the Earth's atmosphere, and his remarks on the subject give an illustration of the uncertain opinions of astronomers before 1860 as to the physical origin and constitution of these solar appendages. Writing to the Astronomer Royal in the latter end of 1859, Lamont remarked: "I suppose them to be produced by thin clouds, or masses floating in our atmosphere and condensed by

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the depression of temperature in the shadow of the Moon." The eclipse of 1860 was favourably observed by him at Castellon de la Plana, and in his *résumé* of the observations Lamont refers to this opinion as one no longer tenable: "With regard to the hypothesis advanced by myself that the colours of the protuberances are produced by inflexion of light at the Moon's limb, and their forms by small masses of vapour floating in our atmosphere, this has been set aside by the circumstance that the same protuberances were seen at different places. Nevertheless, I cannot yet entirely give up the opinion that the vapours of an atmosphere—that is, the condensations caused by reduction of temperature next to the inmost shadow—do exercise a very considerable influence upon the phenomena of total eclipses, and especially upon the forms of the protuberances."

In 1840 a very important international system of magnetical observations was organised, and Professor Lamont, who had previously established a magnetical Observatory, entered into the scheme with great earnestness and zeal, and his experience and counsel were found to be of considerable service in arranging the plan of observation. The question was taken up with energy by the Council of the Royal Society, who appointed a strong committee of English physicists, by whom a series of elaborate instructions were drawn up for the guidance of the observers, and to insure order and regularity in the observations. The Government had previously sanctioned the equipment of an Antarctic expedition for scientific objects, under Captain James Clark Ross, and, in connection with this expedition, the establishment of Observatories in different parts of the globe for the special observation of magnetical and meteorological phenomena. The observations were simultaneously made at all the stations, the time chosen being the commencement of each two-hourly interval during the twenty-four hours, Göttingen mean solar time. No one took a greater interest in the success of this great scientific expedition than Professor Lamont, whose co-operation in the undertaking proved to be of great value. His own observations during the first three years of the experiment are contained in the *Abhandlungen* of the Munich Academy of Sciences, vol. iii., 1837-43.

In the *Catalogue of Scientific Papers* the titles of 107 separate investigations, distributed in various scientific publications, are attached to the name of Professor Lamont. These, however, take no account of the successive volumes of the *Annalen* and their contents. The greater number of his miscellaneous papers are devoted to magnetical or meteorological researches, but the record of astronomical work in the *Annalen* is a sufficient proof that practical astronomy was not neglected at the Munich Observatory. Lamont's first magnetical paper whose title is recorded in the Scientific Catalogue is *Bestimmung der Horizontal-Intensität des Erdmagnetismus nach absolutem Maasse*. This contribution to an almost new science was followed by a long series

of miscellaneous researches on magnetical and meteorological observations and instruments, all of which bear the marks of his great experience. He has also published an exhaustive treatise on the science, which has gone through several editions, the last of which appeared in 1867 under the title of *Handbuch der Magnetismus*.

Though the name of Professor Lamont may be best known to posterity in association with magnetic science, it must also be permanently connected with the history of astronomy of our time by the excellent series of zone-observations of telescopic stars carried out under his direction at the Munich Observatory. This valuable collection of reduced mean places of small stars is contained in six volumes, published as supplements to the *Annalen der K. Sternwarte*, in which the original observations are given in successive volumes. The total number of stars observed are 34,674, contained in ten catalogues, each extending over a zone of six degrees of declination, and a supplementary catalogue containing stars accidentally omitted in their proper zone. The portion of the heavens included in this survey of Lamont extends from 27° north declination to 33° south declination; but his principal attention was given to the stars in the five zones between $+15^{\circ}$ and -15° , nearly five-sixths of the whole being included between these parallels. The resulting mean right ascensions and declinations are reduced to 1850. We have found, from a comparison of the mean places of several corresponding stars in the Munich and Greenwich Catalogues, that they agree generally within reasonable limits, and thus for most purposes we believe that the Munich places may be adopted with confidence. Professor Lamont has himself compared his catalogues with those of Lalande, Bessel, Rümker, and Schjellerup, and the differences between the corresponding right ascensions and declinations are inserted in the zone catalogues. Excepting in cases where there is an evident error in the observations, these differences appear to be as small as might be expected, considering that a large number of the places of the stars depend on one observation. The stars observed are all invisible to the naked eye, being of the eighth and ninth magnitudes, with a few of the tenth. The insertion of the magnitudes of so many telescopic stars may occasionally be found useful in investigations on the periodicity of variable stars, and the whole work is a valuable supplement to the more extensive zone-observations of Argelander and Bessel. The six volumes were published in different years, the first in 1866 and the last in 1874.

In the *Monthly Notices*, vol. x., p. 42, Mr. Hind points out that the planet *Neptune* was unconsciously observed at Munich as a star on two occasions—on October 25, 1845, in zone 338, and on September 7, 1846, in zone 379—before its discovery by Dr. Galle. The apparent R.A. and N.P.D. of *Neptune* for these days were deduced by Mr. Hind from a comparison of the observed positions of the planet with those of several of the brighter stars

in each zone whose places had been determined at Greenwich or the Cape.

Professor Lamont was a member of most of the principal Scientific Academies and Societies of Europe. In 1852 the Royal Society elected him a Foreign Member, and he was connected with our Society, as one of its Associates, from May 12, 1837. His scientific services were frequently honoured by Foreign Governments, from which he received various orders of knighthood. He died at Munich on August 6, 1879, at the age of seventy-four.

E. D.
